SCIENCE

FRIDAY, JUNE 4, 1915

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THE ELECTRICAL PHOTOMETRY OF STARS[1]

IN measures of the light of stars there are some advantages and some drawbacks as compared with photometric work in the laboratory. First of all, we are not concerned with absolute measures of intensity, but what we want to know is how the light of a heavenly body varies. If the light is constant, there is not much to be learned, but if it changes, we may infer a great deal from the law of variation. In laboratory and commercial photometry, it is customary to measure what may be called the visual brightness of a source of light, but with the stars it is immaterial for many purposes whether we study the changes of the red, or the blue, or any other part of the spectrum, though in fact any complete stellar photometry should include measures in all regions, infra-red, visible and ultra-violet.

The chief disadvantage in stellar photometry is that the stars are so faint that it is usually not feasible to expand their images out into surfaces, and most forms of stellar photometer depend upon comparisons of two point images by the eye. Although the eye is a wonderful instrument, especially in the range of intensity over which it may be used, the limit of accuracy attained by looking first at one light and then at another is much the same as though instead of using a balance we should weigh objects by lifting them in our hands. It is safe to say that no observer has ever been able to get visual results accurate to 1 per cent., and in the best measures there are occasional errors of 10 per cent., 20 per cent. and even more. It was hoped that the introduc-

[1] Read at the meeting of the National Academy of Sciences, April 20, 1915.